Кальтман Т. И. (СПб ф САО) arles@mail.ru

Морфология и классификация активных областей

1. Cortie
2. Zurich
3. McIntosh
4. Mt Wilson

Umbra	The darkest, coolest portion of a sunspot
Penumbra	The lighter, warmer area surrounding the umbra of some sunspots
Pore	A dark spot on the Sun, essentially a sunspot umbra with no penumbra

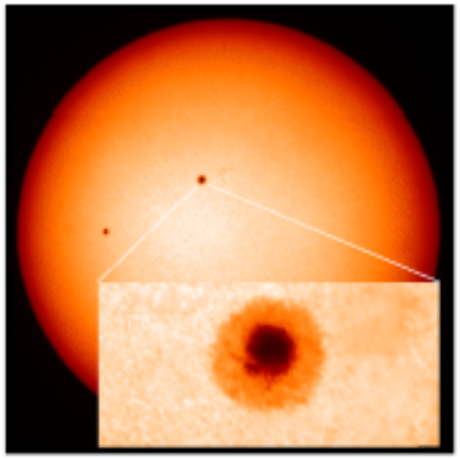

Image from University of Hawaii

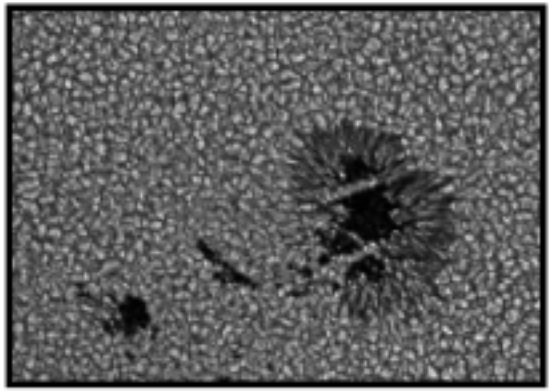

Image from the Swedish Vacuum Telescope, La Palma Observatory

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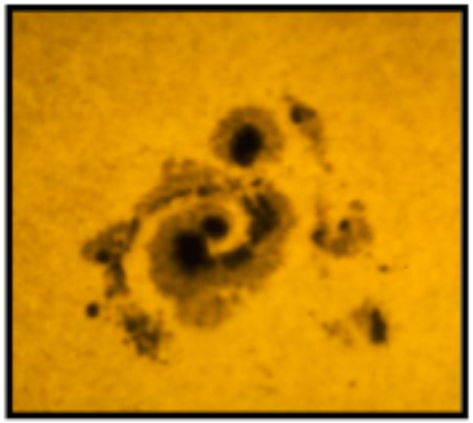


Image from Kitt Peak National Observatory

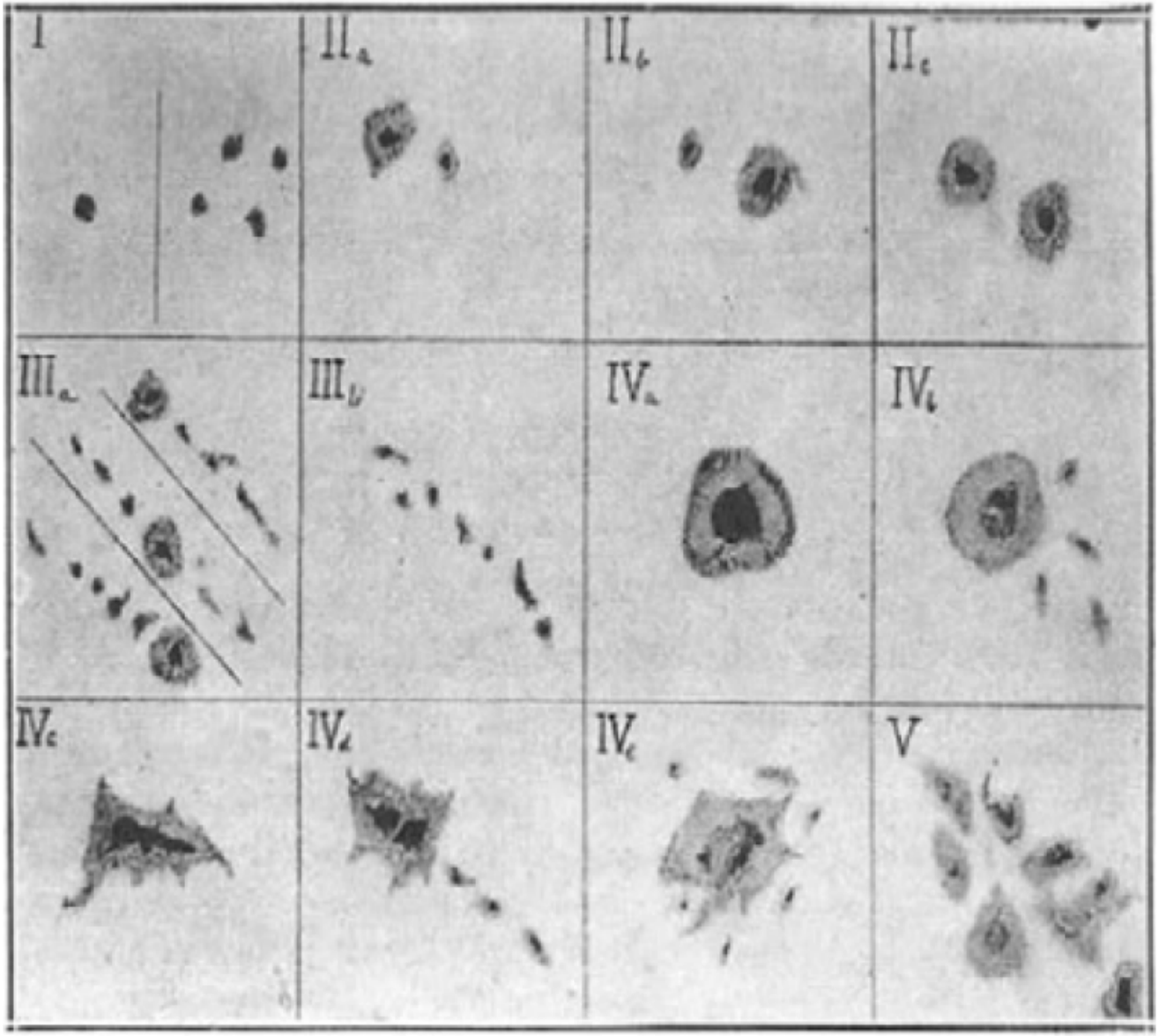
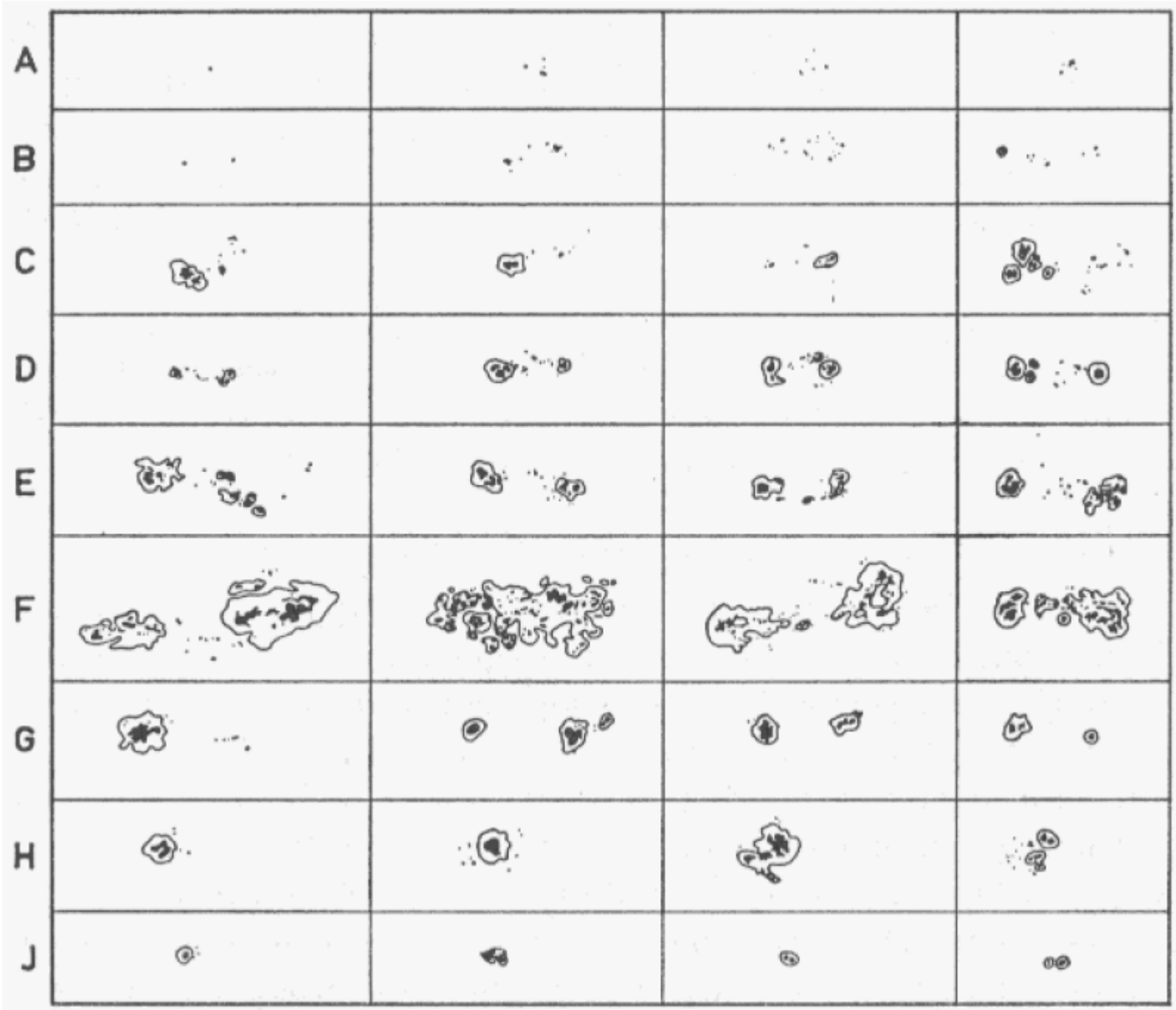
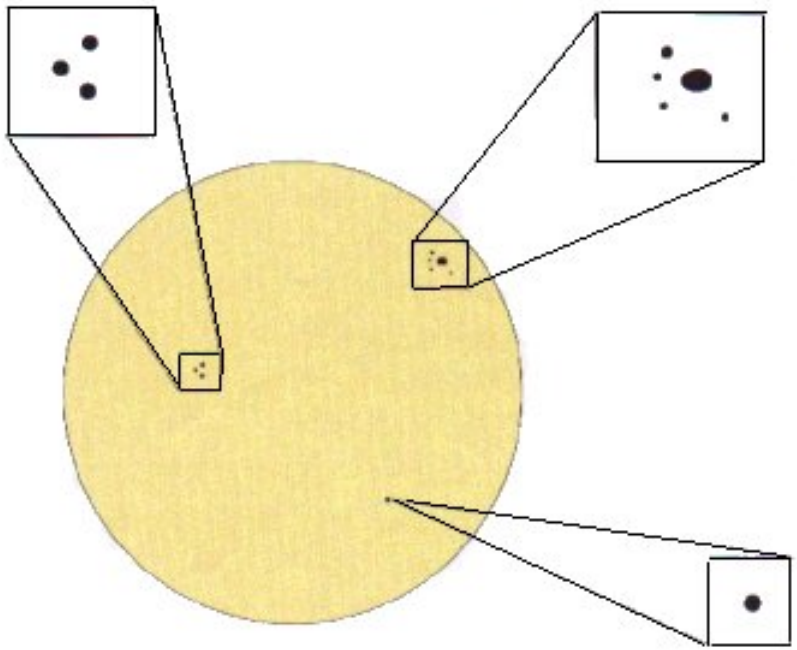


Figure 1. Examples of sunspot groups in the Cortie classification [Source: Observatorio de Valencia, 1928a].

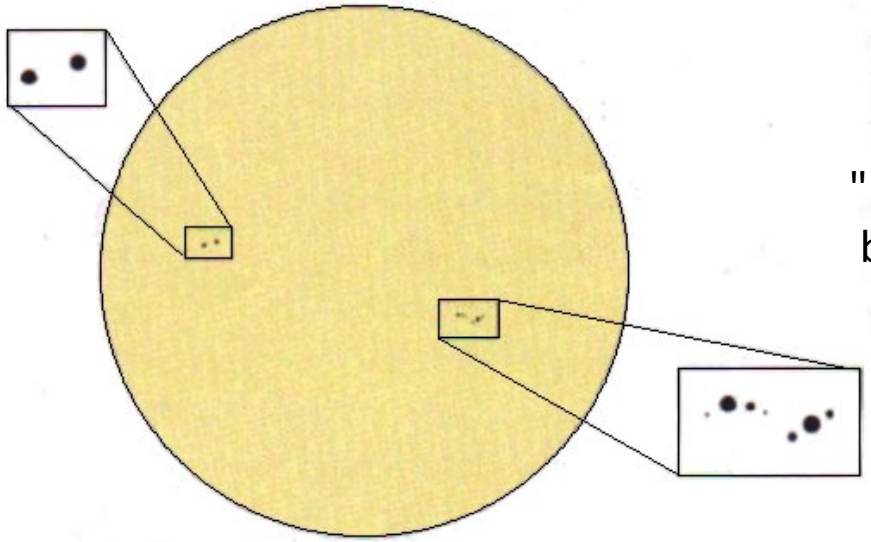

A
B
C
D
E
F
G
H
J

The Zurich Classification System of Sunspot Groups

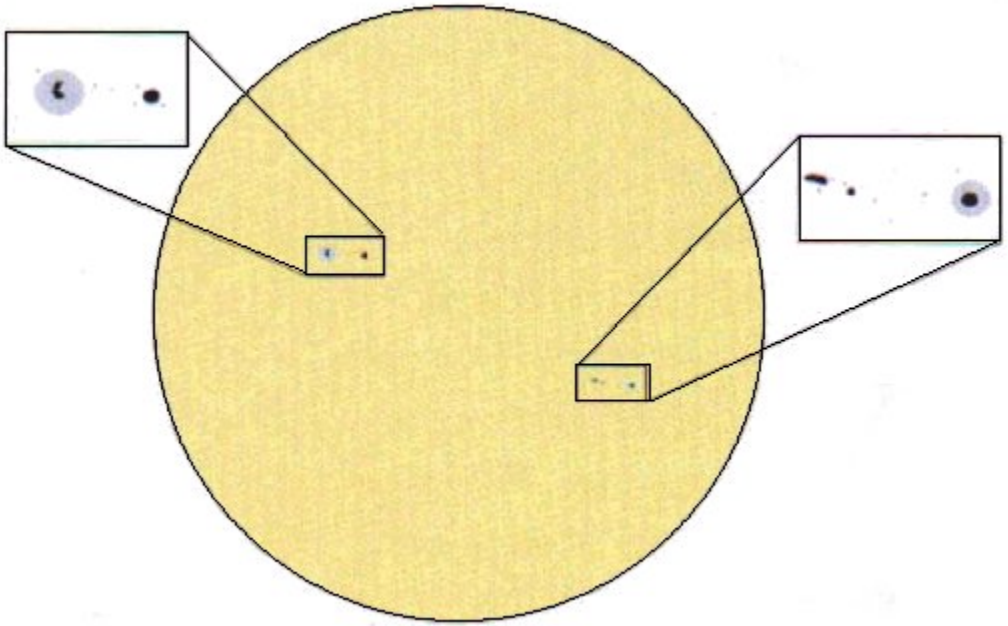
https://www.aavso.org/zurich-classification-system-sunspot-groups



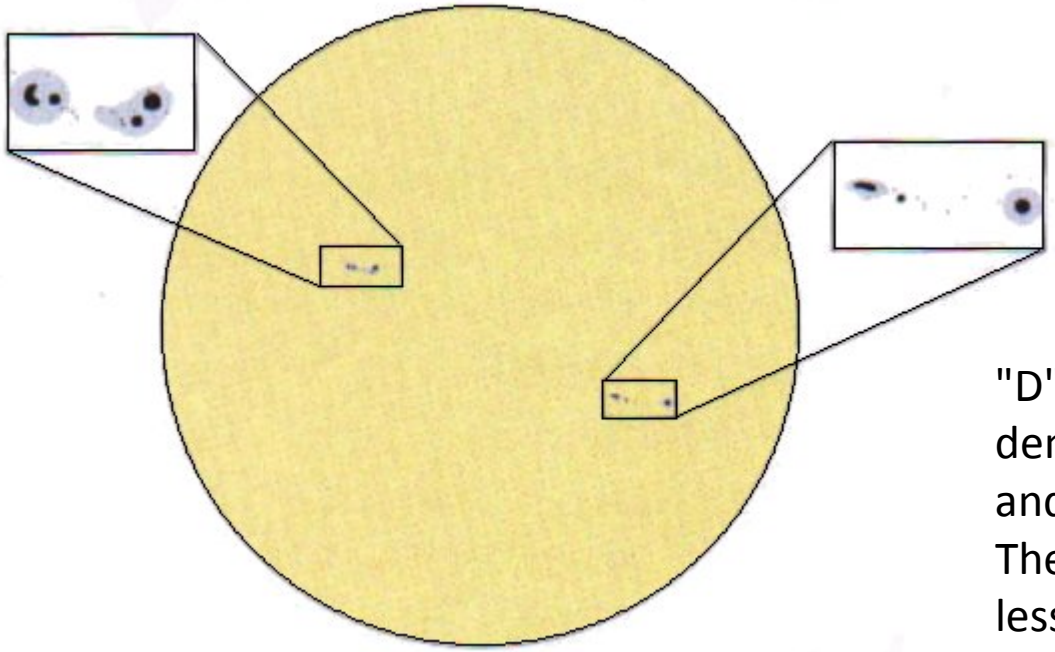
- "A" Type: One or more tiny spots that do not demonstrate bi-polarity or exhibit penumbra.
-



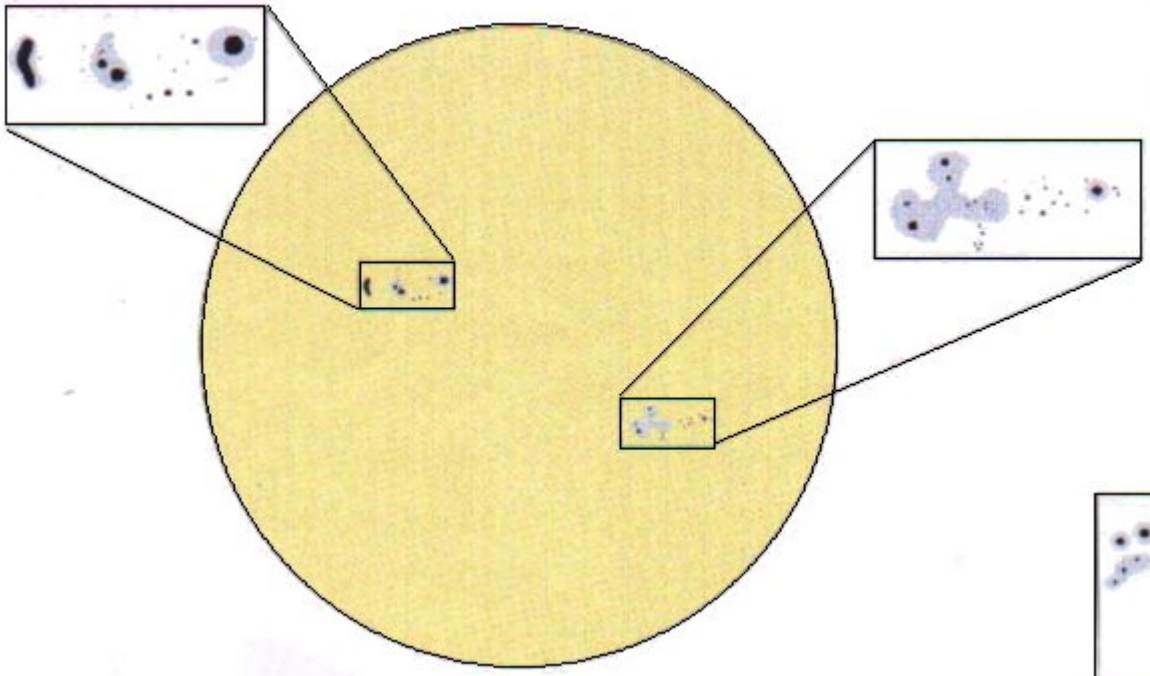
"B" Type: Two or more tiny spots that demonstrate bi-polarity but do not exhibit penumbra.



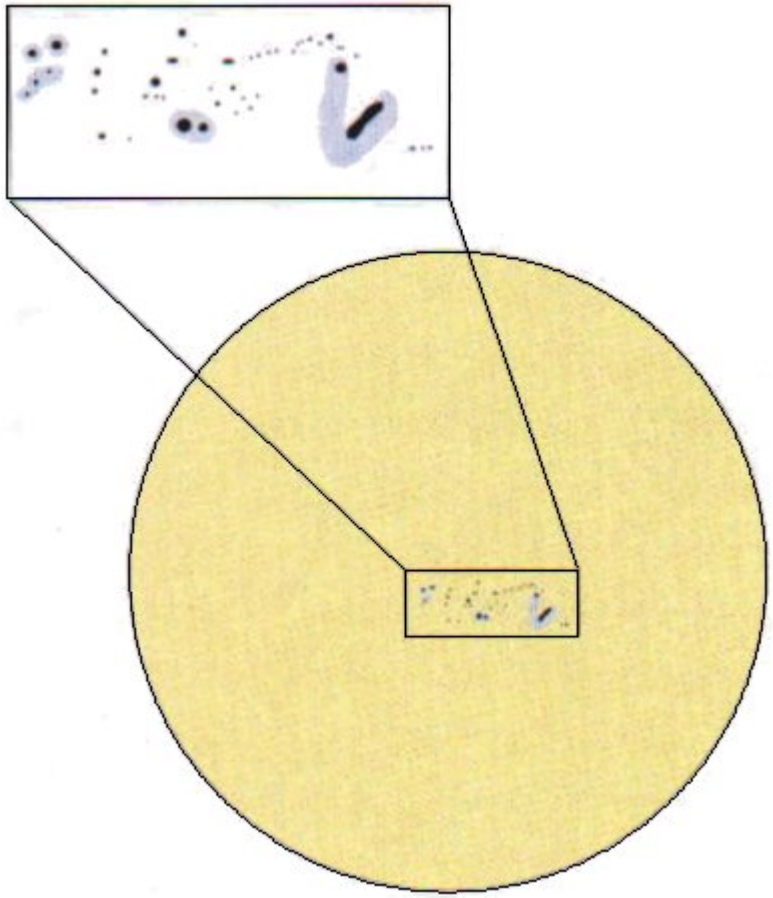
"C" Type: Two or more spots that demonstrate bi-polarity and either the lead spot or trailing spot has a penumbra.



"D" Type: Two or more spots that demonstrate bi-polarity and the lead spot and trailing spots display a penumbra. The "D" Type will occupy 10 degrees or less of Solar longitude.



"E" Type: This group type is similar to the "D" type but spreads between 10 and 15 degrees of Solar longitude.

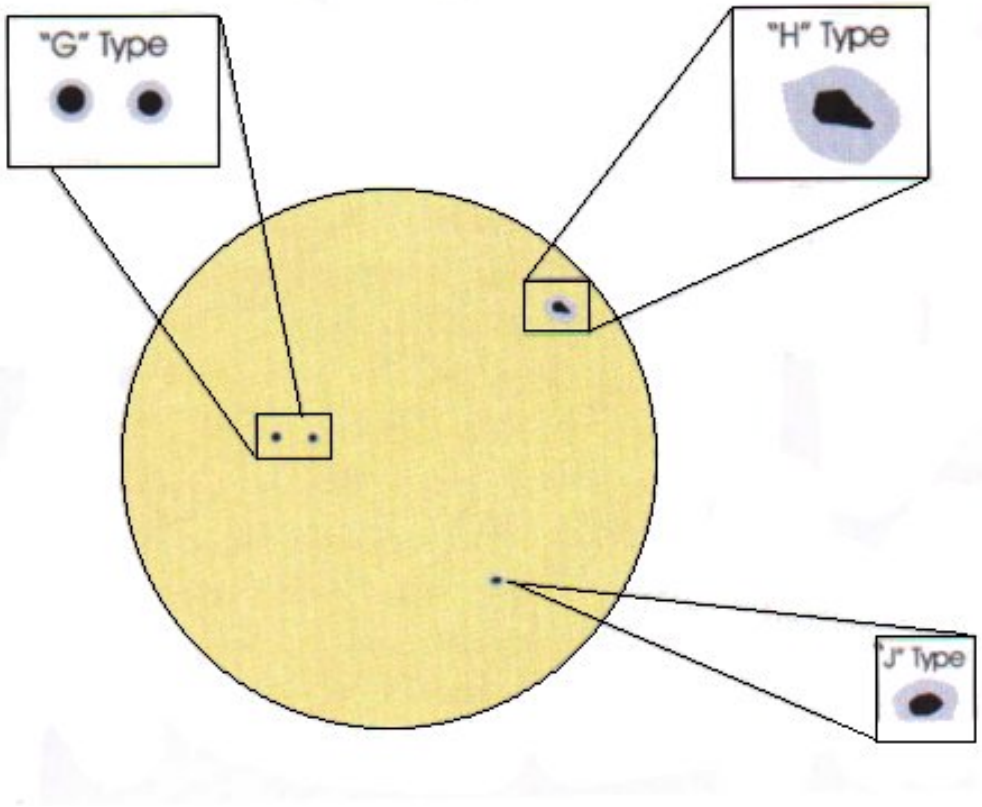


"F" Type: Largest and most extensive of groups, similar to "E" type but will cover in excess of 15 degrees of Solar longitude.

"G" Type: The decayed remnant of "D", "E", and "F" groups. Demonstrates a bi-polar group with penumbras.

"H" Type: The decayed remnant of "C", "D", "E", and "F" groups. A single spot group with penumbra. Must be larger than two and one-half degrees in diameter. The "H" type occasionally is accompanied by a few small spots.

"J" Type: The same as the "H" type but has a diameter less than 2½ degrees.



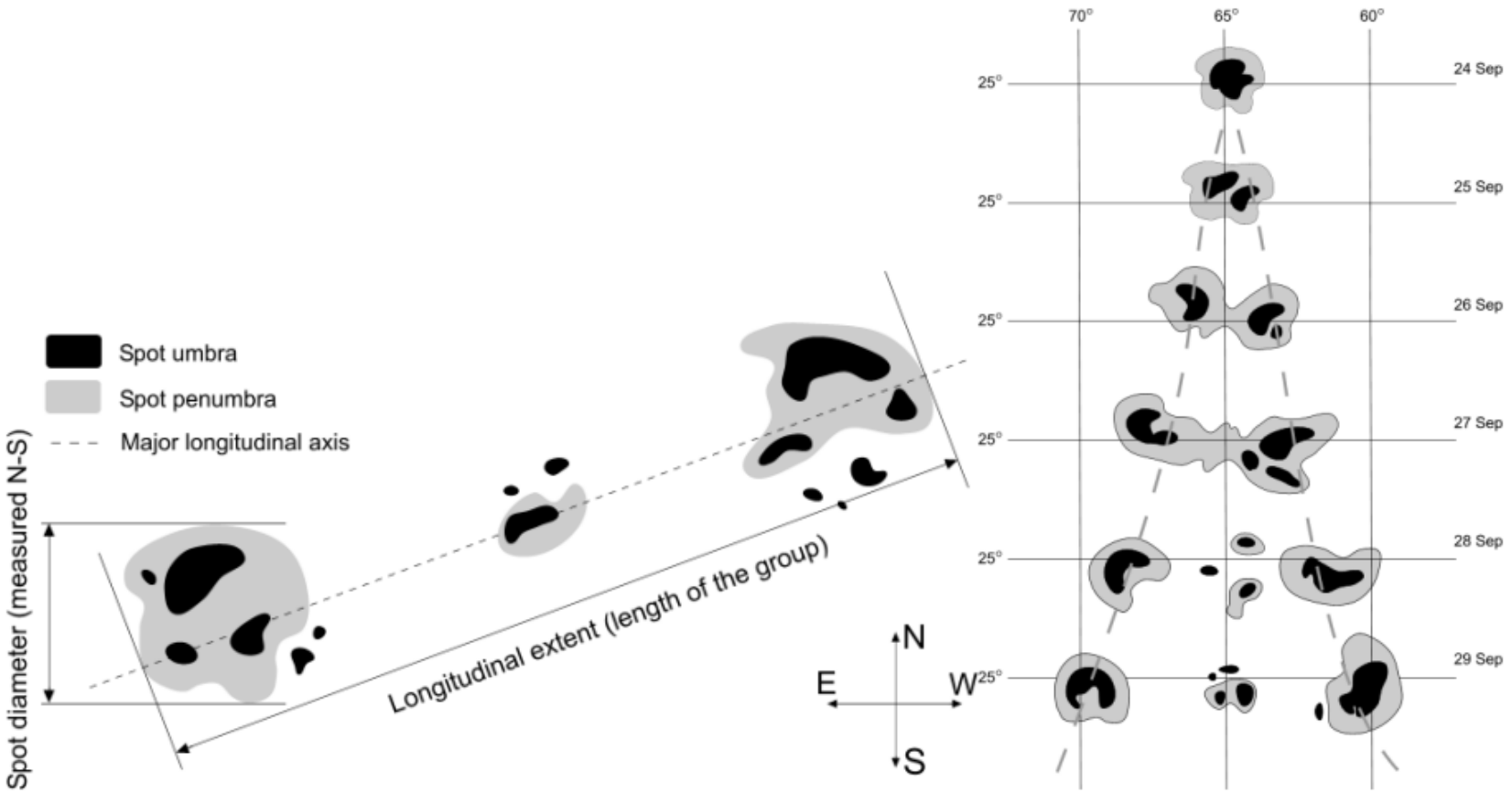
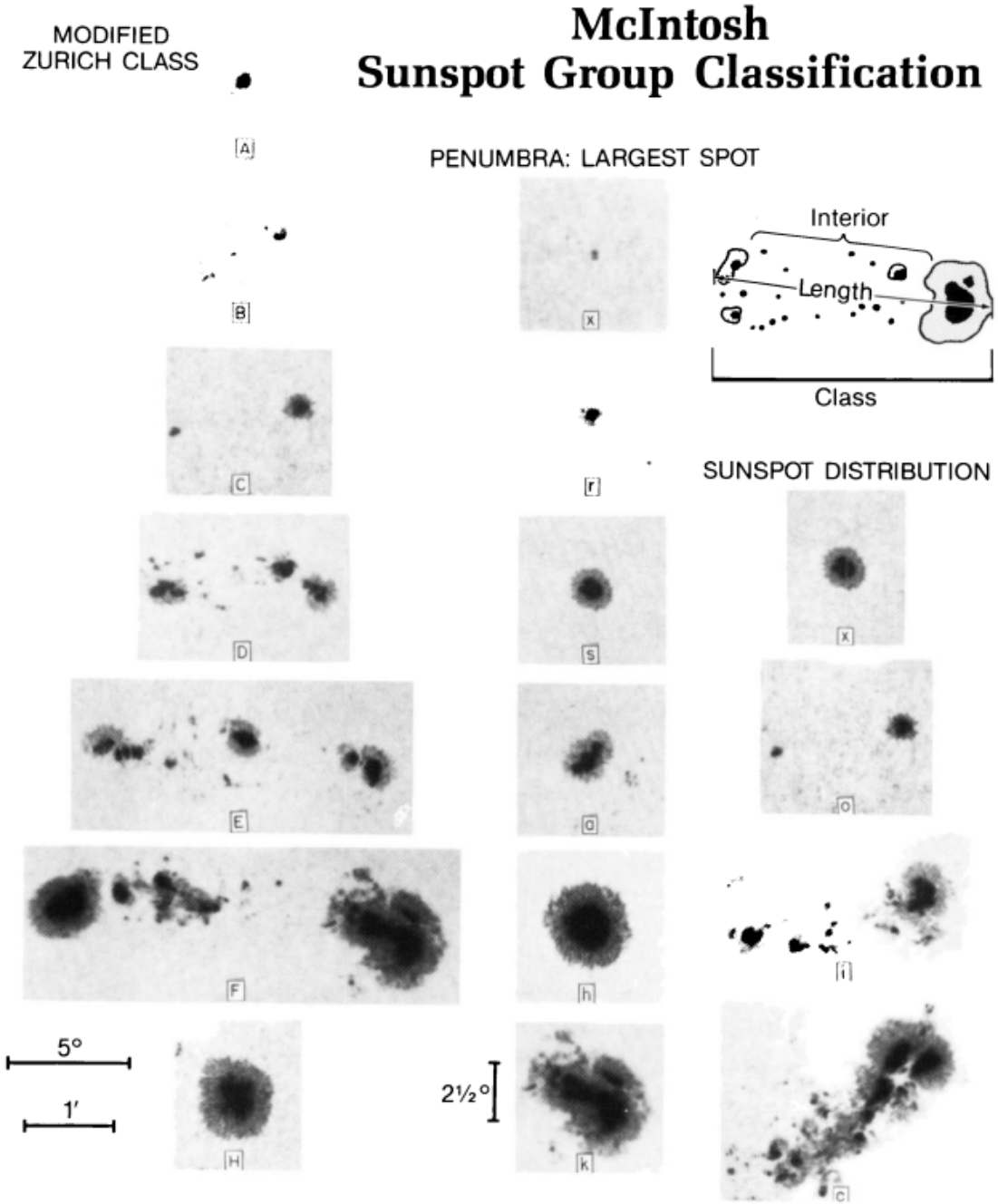


Figure 1. Left: The drawing showing how sunspots diameter and group length should be measured. Right: The drawing showing that over time differential rotation widens the longitudinal separation between the leading and following spot leading to a class change for the group.



1990, Solar Physics
Patrick S. McIntosh

Fig. 1. The 3-component McIntosh classification, with examples of each category.

The 3 component McIntosh classification (McIntosh, Sol. Phys. 125, 251-267,1990)
is based on the general form 'Zpc', where
'Z' is the modified Zurich Class,
'p' describes the penumbra of the principal spot, and
'c' describes the distribution of spots in the interior of the group.

http://sidc.oma.be/educational/classification.php

Z-values: (Modified Zurich Sunspot Classification).

A - A small single unipolar sunspot. Representing either the formative or final stage of evolution.

B - Bipolar sunspot group with no penumbra on any of the spots.

C - A bipolar sunspot group. One sunspot must have penumbra.

D - A bipolar sunspot group with penumbra on both ends of the group. Longitudinal extent does not exceeds 10 deg.

E - A bipolar sunspot group with penumbra on both ends. Longitudinal extent exceeds 10 deg. but not 15 deg.

F - An elongated bipolar sunspot group with penumbra on both ends. Longitudinal extent exceeds 15 deg.

H - A unipolar sunspot group with penumbra.

p-values:

x - no penumbra (group class is A or B)

r - rudimentary penumbra partially surrounds the largest spot. This penumbra is incomplete, granular rather than filamentary, brighter than mature penumbra, and extends as little as 3 arcsec from the spot umbra. Rudimentary penumbra may be either in a stage of formation or dissolution.

s - small, symmetric (like Zurich class J). Largest spot has mature, dark, filamentary penumbra of circular or elliptical shape with little irregularity to the border. The north-south diameter across the penumbra is less or equal than 2.5 degrees.

a - small, asymmetric. Penumbra of the largest spot is irregular in outline and the multiple umbra within it are separated. The north-south diameter across the penumbra is less or equal than 2.5 degrees.

h - large, symmetric (like Zurich class H). Same structure as type 's', but north-south diameter of penumbra is more than 2.5 degrees. Area, therefore, must be larger or equal than 250 millionths solar hemisphere.

k - large, assymetric. Same structure as type 'a', but north-south diameter of penumbra is more than 2.5 degrees. Area, therefore, must be larger or equal than 250 millionths solar hemisphere.

c-values

x - undefined for unipolar groups (class A and H)

o - open. Few, if any, spots between leader and follower. Interior spots of very small size. Class E and F groups of 'open' category are equivalent to Zurich class G.

i - intermediate. Numerous spots lie between the leading and following portions of the group, but none of them possesses mature penumbra.

c - compact. The area between the leading and the following ends of the spot group is populated with many strong spots, with at least one interior spot possessing mature peanumbra. The extreme case of compact distribution has the entire spot group enveloped in one continuous prenumbral area.

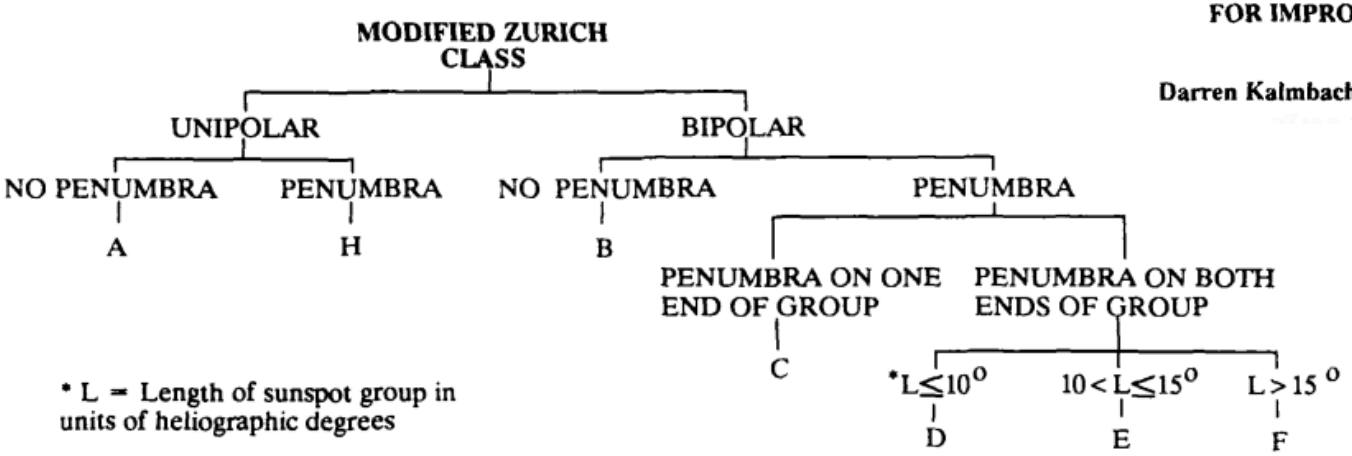
Criteria:

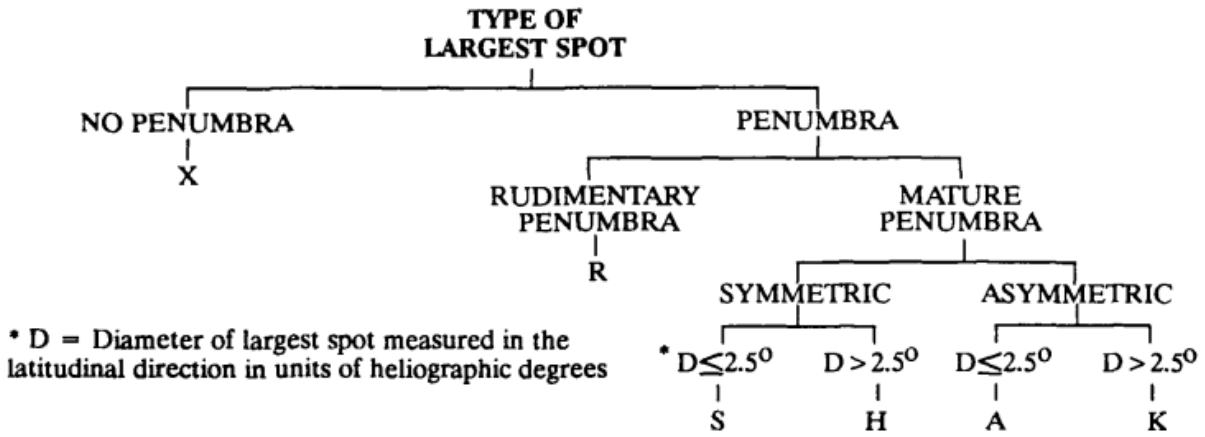
SUNSPOT CHARACTER-ISTICS		Magnetic type		Length of group			Penumbra				Penumbra size		Distribution of spots			
CV-number	Z/McI-class	Uni-polar	Bi-polar	<10 h.degs.	>10<15 h.degs.	>15 h.degs.	No penumbra	Rudi-mentary	Asym-metric	Sym-metric	P: <2,5 h.degs.	P: >2,5 h.degs.	Single	Open	Inter-mediate	Compact
1	Axx	X	.	.	.	.	X	.	.	.	.	.	X	.	.	.
2	Bxo	.	X	.	.	.	X	.	.	.	.	.	.	X	.	.
3	Bxi	.	X	.	.	.	X	.	.	.	.	.	.	.	X	.
4	Hrx	.	X	.	.	.	.	X	.	.	.	.	X	.	.	.
5	Cro	.	X	.	.	.	.	X	.	.	.	.	.	X	.	.
6	Cri	.	X	.	.	.	.	X	.	.	.	.	.	.	X	.
7	Hax	X	.	.	.	.	.	.	X	.	.	.	X	.	.	.
8	Cao	.	X	.	.	.	.	.	X	.	.	.	.	X	.	.
9	Cai	.	X	.	.	.	.	.	X	.	.	.	.	.	X	.
10	Hsx	X	.	.	.	.	.	.	.	X	.	.	X	.	.	.
11	Cso	.	X	.	.	.	.	.	.	X	.	.	.	X	.	.
12	Csi	.	X	.	.	.	.	.	.	X	.	.	.	.	X	.
13	Dro	.	X	X	.	.	.	X	.	.	.	.	.	X	.	.
14	Ero	.	X	.	X	.	.	X	.	.	.	.	.	X	.	.
15	Fro	.	X	.	.	X	.	X	.	.	.	.	.	X	.	.
16	Dri	.	X	X	.	.	.	X	.	.	.	.	.	.	X	.
17	Eri	.	X	.	X	.	.	X	.	.	.	.	.	.	X	.
18	Fri	.	X	.	.	X	.	X	.	.	.	.	.	.	X	.
19	Dao	.	X	X	.	.	.	.	X	.	X	.	.	X	.	.
20	Eao	.	X	.	X	.	.	.	X	.	X	.	.	X	.	.
21	Fao	.	X	.	.	X	.	.	X	.	X	.	.	X	.	.
22	Dai	.	X	X	.	.	.	.	X	.	X	.	.	.	X	.
23	Eai	.	X	.	X	.	.	.	X	.	X	.	.	.	X	.
24	Fai	.	X	.	.	X	.	.	X	.	X	.	.	.	X	.
25	Dso	.	X	X	.	.	.	.	.	X	X	.	.	X	.	.
26	Eso	.	X	.	X	.	.	.	.	X	X	.	.	X	.	.
27	Fso	.	X	.	.	X	.	.	.	X	X	.	.	X	.	.
28	Dsi	.	X	X	.	.	.	.	.	X	X	.	.	.	X	.
29	Esi	.	X	.	X	.	.	.	.	X	X	.	.	.	X	.
30	Fsi	.	X	.	.	X	.	.	.	X	X	.	.	.	X	.

29	Esi	.	X	.	X	.	.	.	.	X	X	.	.	.	X	.
30	Fsi	.	X	.	.	X	.	.	.	X	X	.	.	.	X	.
31	Dac	.	X	X	.	.	.	.	X	.	X	.	.	.	.	X
32	Eac	.	X	.	X	.	.	.	X	.	X	.	.	.	.	X
33	Fac	.	X	.	.	X	.	.	X	.	X	.	.	.	.	X
34	Dsc	.	X	X	.	.	.	.	.	X	X	.	.	.	.	X
35	Esc	.	X	.	X	.	.	.	.	X	X	.	.	.	.	X
36	Fsc	.	X	.	.	X	.	.	.	X	X	.	.	.	.	X
37	Hkx	X	.	.	.	.	.	.	X	.	.	X	X	.	.	.
38	Cko	.	X	.	.	.	.	.	X	.	.	X	.	X	.	.
39	Cki	.	X	.	.	.	.	.	X	.	.	X	.	.	X	.
40	Hhx	X	.	.	.	.	.	.	.	X	.	X	X	.	.	.
41	Cho	.	X	.	.	.	.	.	.	X	.	X	.	X	.	.
42	Chi	.	X	.	.	.	.	.	.	X	.	X	.	.	X	.
43	Dko	.	X	X	.	.	.	.	X	.	.	X	.	X	.	.
44	Eko	.	X	.	X	.	.	.	X	.	.	X	.	X	.	.
45	Fko	.	X	.	.	X	.	.	X	.	.	X	.	X	.	.
46	Dki	.	X	X	.	.	.	.	X	.	.	X	.	.	X	.
47	Eki	.	X	.	X	.	.	.	X	.	.	X	.	.	X	.
48	Fki	.	X	.	.	X	.	.	X	.	.	X	.	.	X	.
49	Dho	.	X	X	.	.	.	.	.	X	.	X	.	X	.	.
50	Eho	.	X	.	X	.	.	.	.	X	.	X	.	X	.	.
51	Fho	.	X	.	.	X	.	.	.	X	.	X	.	X	.	.
52	Dhi	.	X	X	.	.	.	.	.	X	.	X	.	.	X	.
53	Ehi	.	X	.	X	.	.	.	.	X	.	X	.	.	X	.
54	Fhi	.	X	.	.	X	.	.	.	X	.	X	.	.	X	.
55	Dkc	.	X	X	.	.	.	.	X	.	.	X	.	.	.	X
56	Ekc	.	X	.	X	.	.	.	X	.	.	X	.	.	.	X
57	Fkc	.	X	.	.	X	.	.	X	.	.	X	.	.	.	X
58	Dhc	.	X	X	.	.	.	.	.	X	.	X	.	.	.	X
59	Ehc	.	X	.	X	.	.	.	.	X	.	X	.	.	.	X
60	Fhc	.	X	.	.	X	.	.	.	X	.	X	.	.	.	X

http://www.cv-helios.net/cvzmval.html

Patricia L. Bornmann
Darren Kalmbach, David Kulhanek, and April Casale





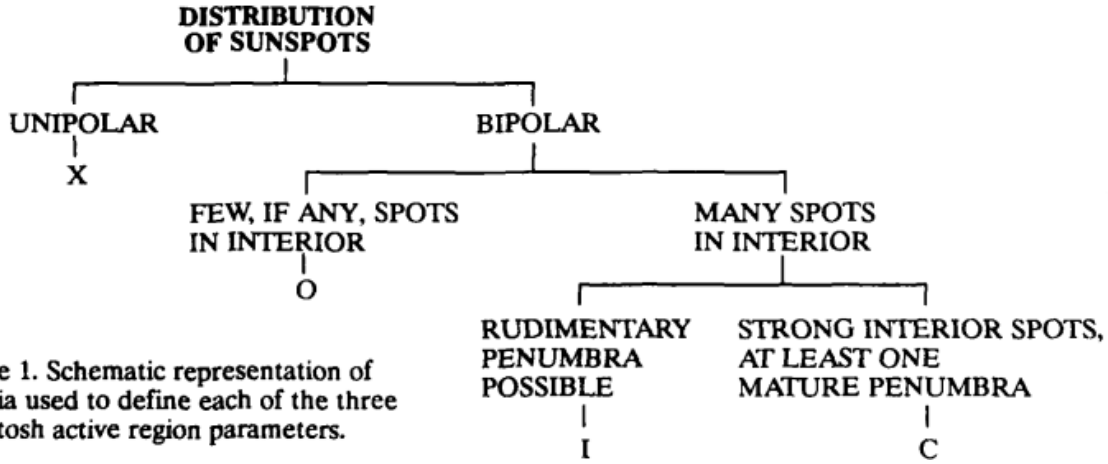
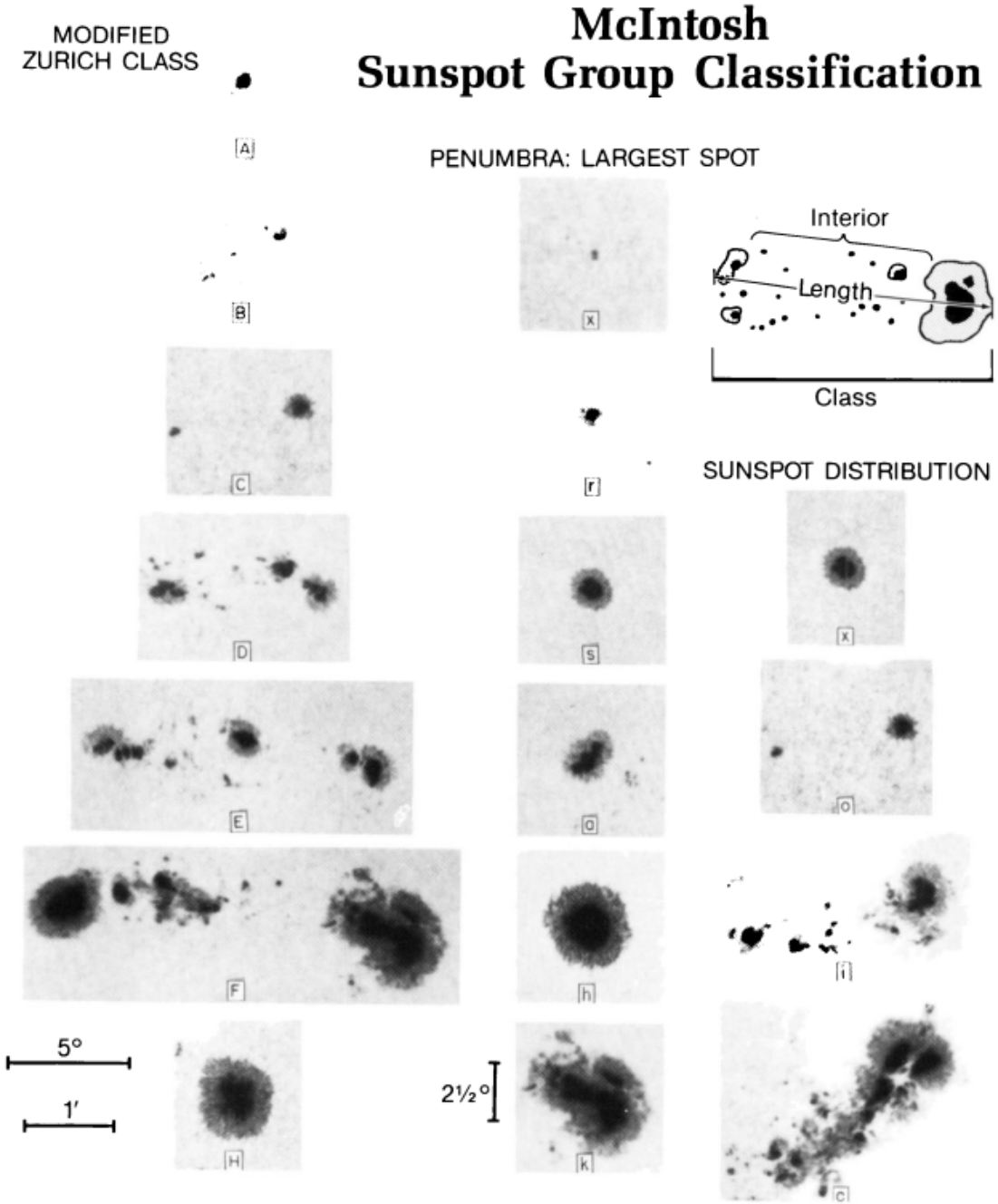


Figure 1. Schematic representation of criteria used to define each of the three McIntosh active region parameters.

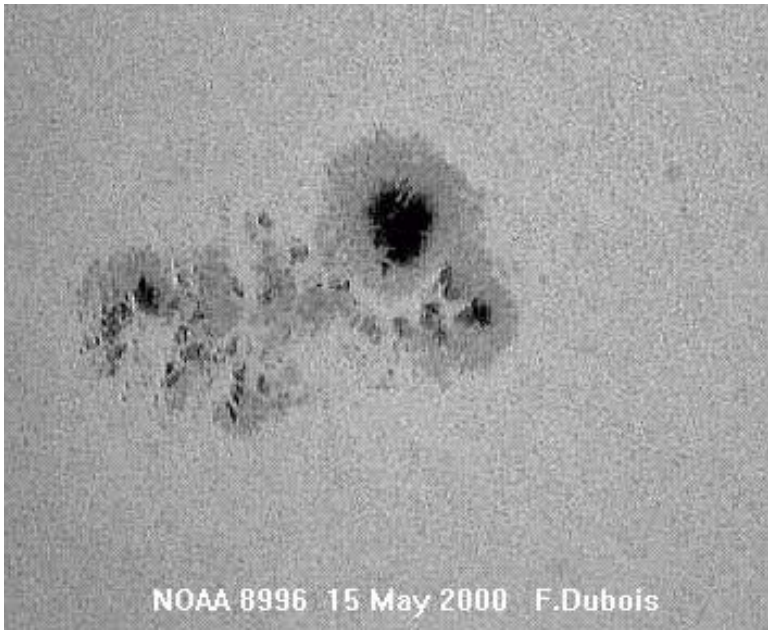


1990, Solar Physics
Patrick S. McIntosh

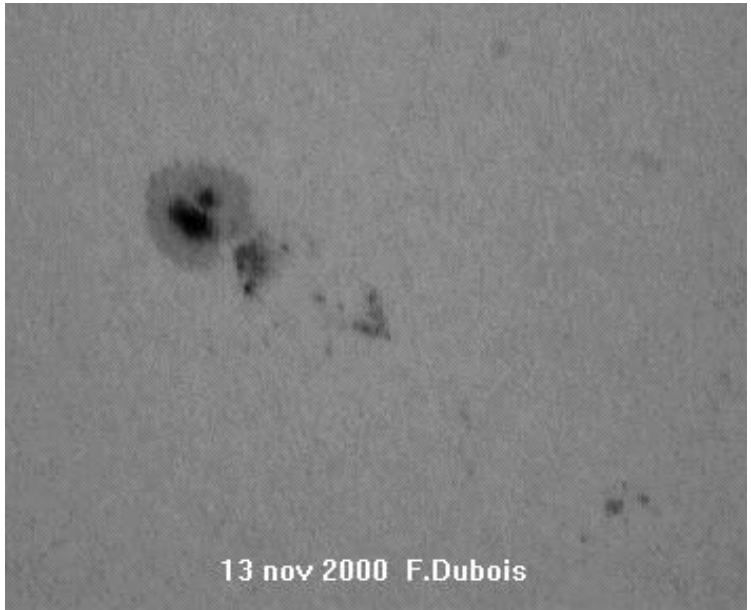
Fig. 1. The 3-component McIntosh classification, with examples of each category.

Dao

Ekc



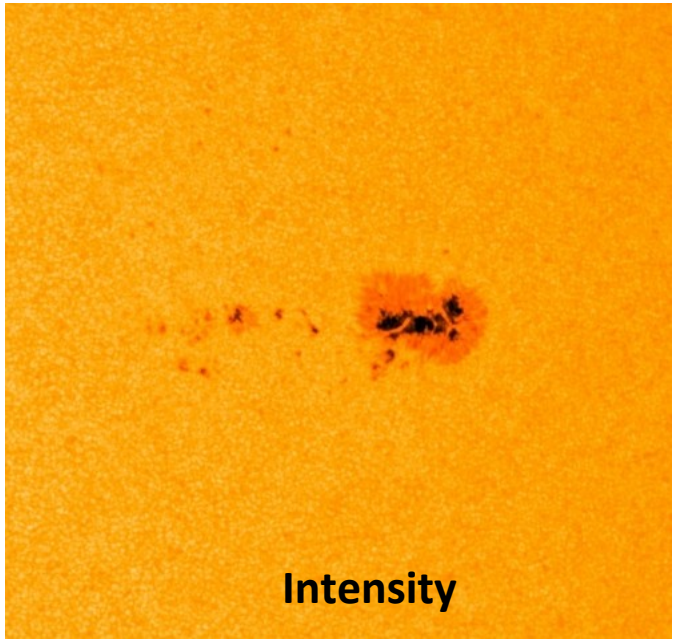
Eao

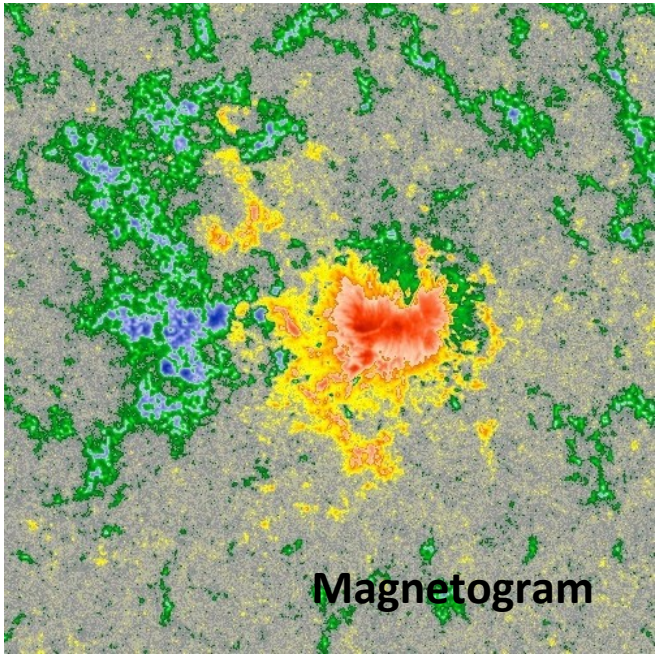


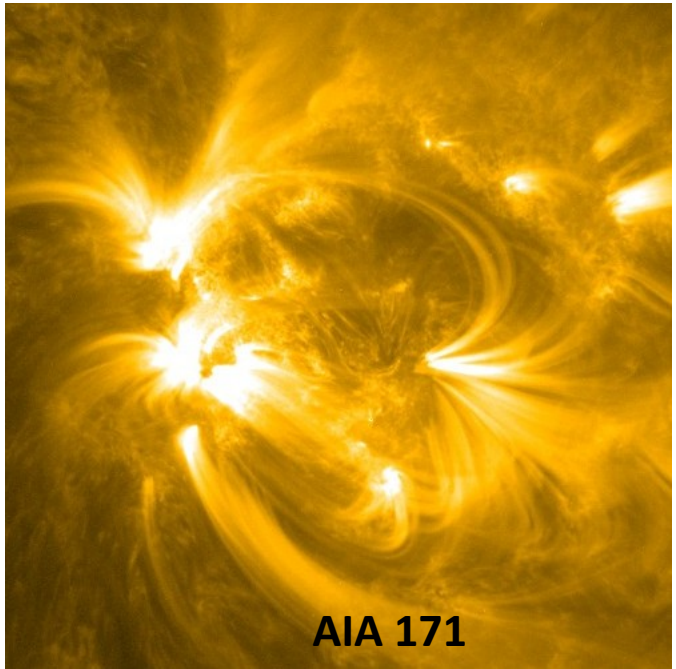
Fko

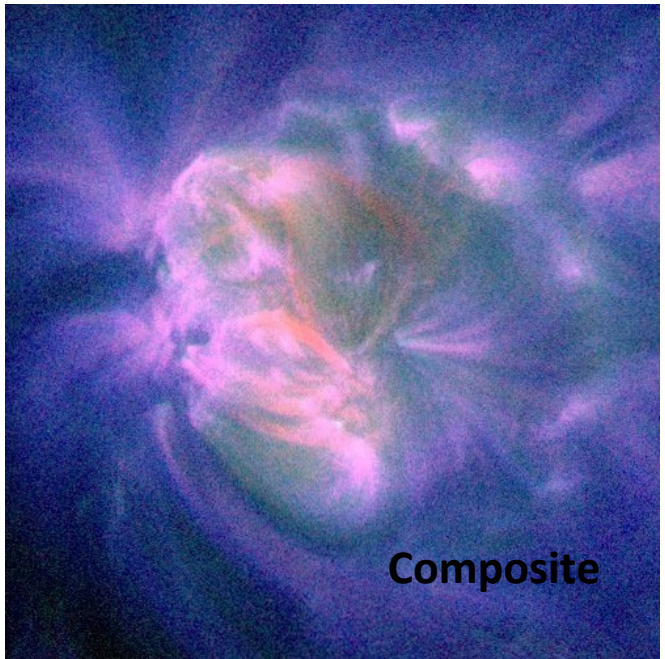
AR12488 Beta DAO

http://www.solarham.net/regions/2488.htm







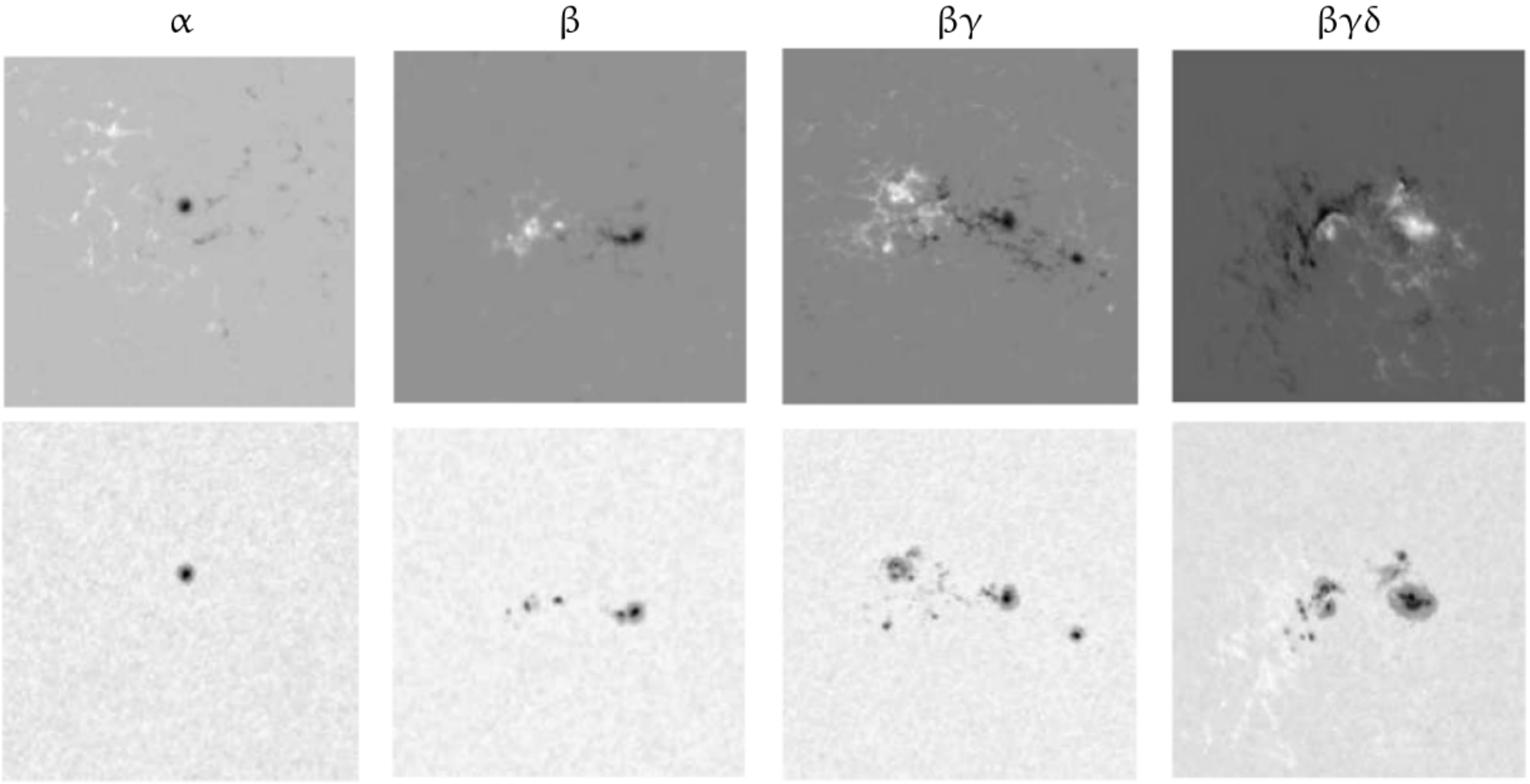


The magnetic classification of sunspots

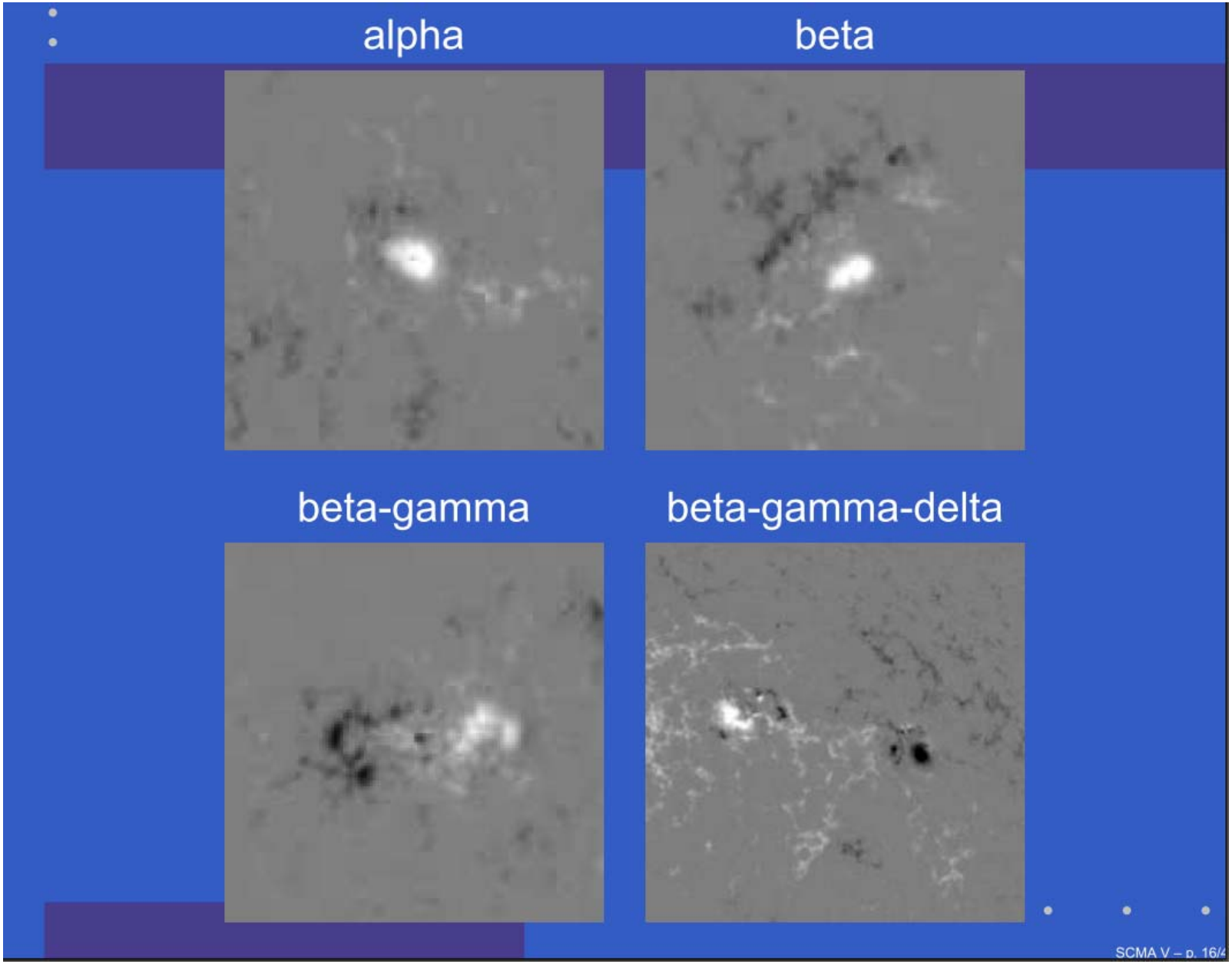
Mount Wilson Magnetic Classifications, Hale Class

α – Alpha: A unipolar sunspot group.
β – Bèta: A sunspot group that has a positive and a negative polarity (or bipolar) with a simple division between the polarities.
γ – Gamma: A complex region in which the positive and negative polarities are so irregularly distributed that they can't be classified as a bipolar Sunspot group.
β-γ – Bèta-Gamma: A bipolar sunspot group but complex enough so that no line can be drawn between spots of opposite polarity. (Bipolar groups which have more than one clear north-south polarity inversion line).
δ – Delta: The umbrae of opposite polarity in a single penumbra.
β-δ – Bèta-Delta: A sunspot group with a general beta magnetic configuration but contains one (or more) delta sunspots.
β-γ-δ – Bèta-Gamma-Delta: A sunspot group with a beta-gamma magnetic configuration but contains one (or more) delta sunspots.
γ-δ – Gamma-Delta A sunspot group with a gamma magnetic configuration but contains one (or more) delta sunspots.

http://www.spaceweatherlive.com/en/help/the-magnetic-classification-of-sunspots



Magnetograms (top row) and white light images (bottom row) for the four sunspot classes.



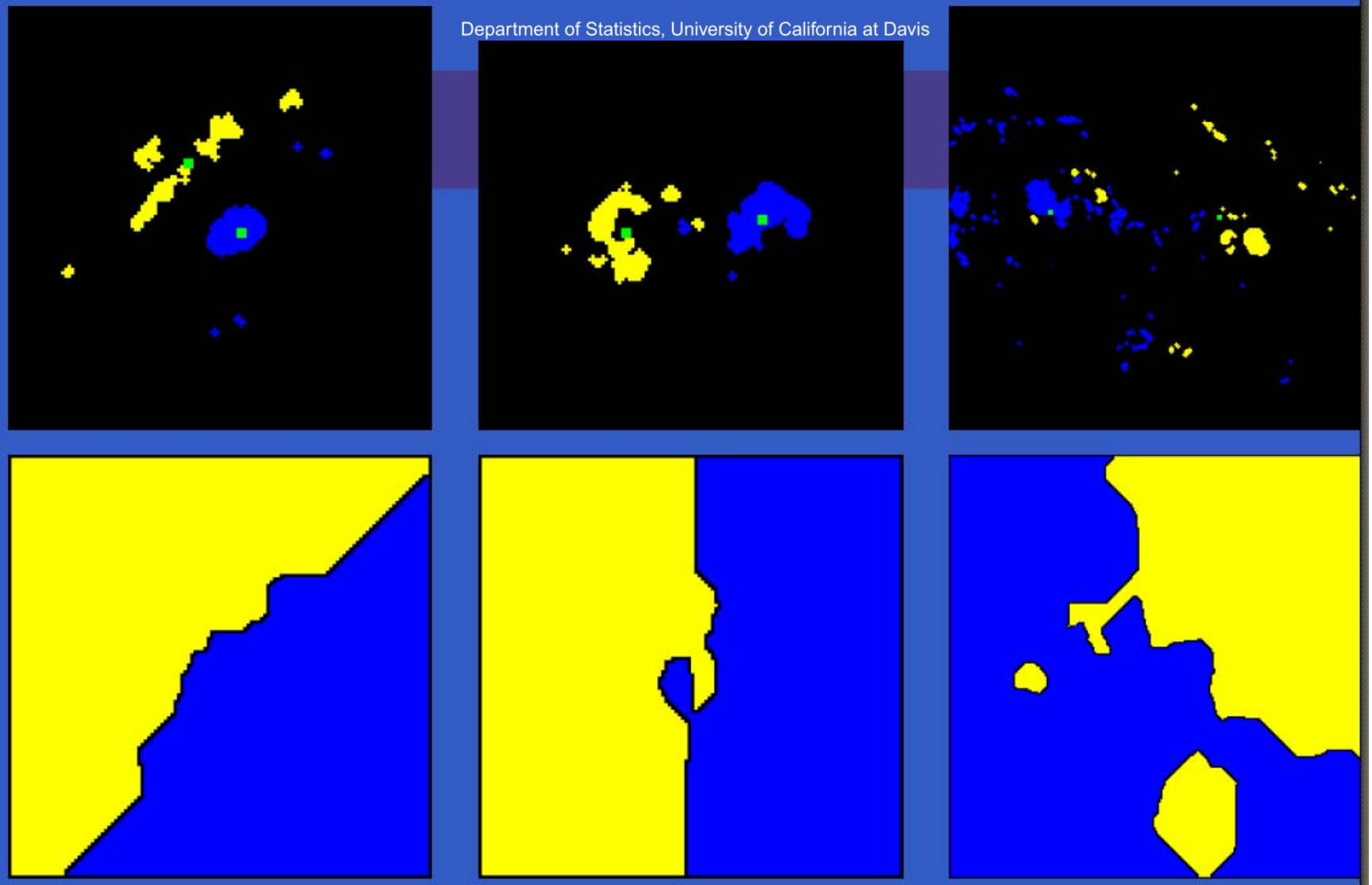
http://astrostatistics.psu.edu/su11scma5/lectures/Tlee_scmav.pdf

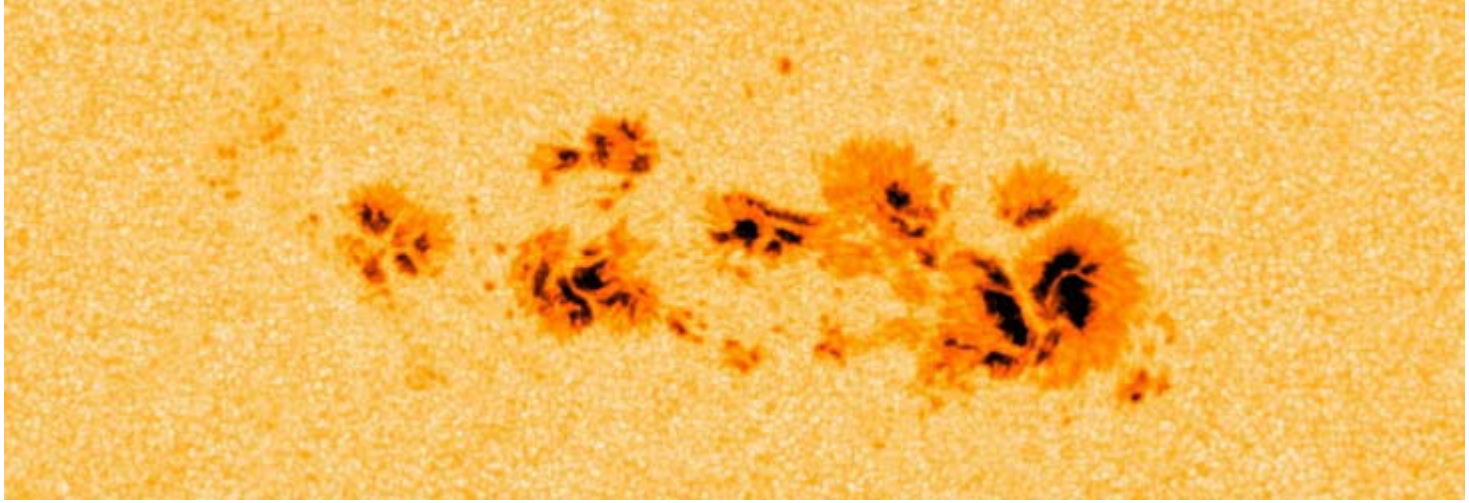
Automatic Detection and Classification of Sunspot Images

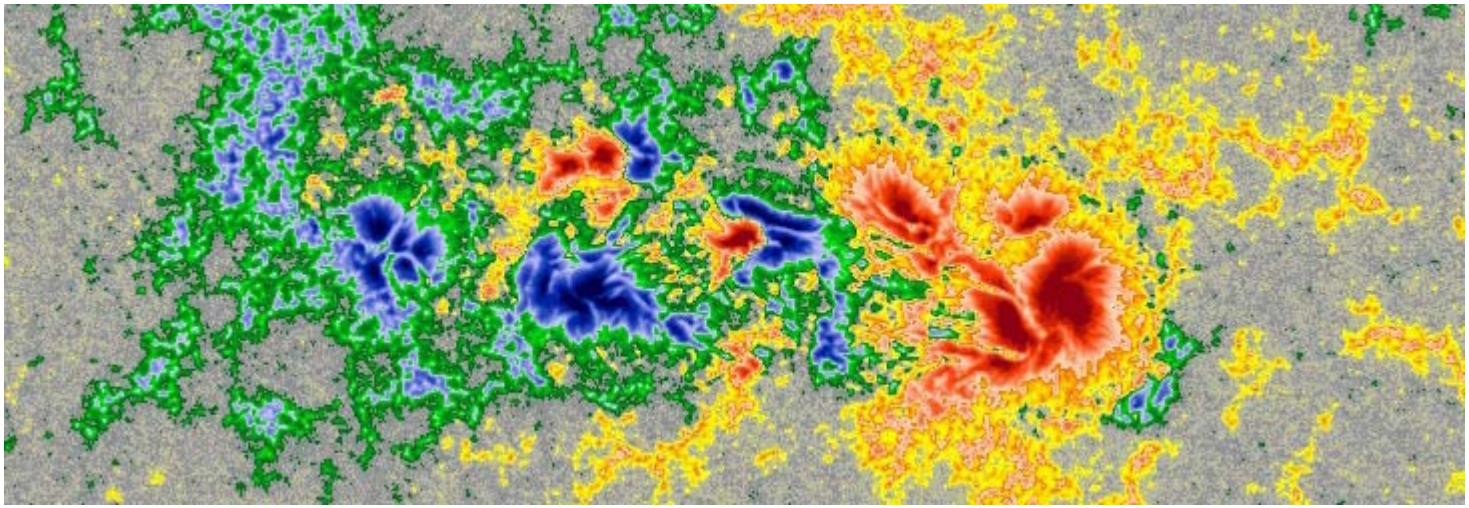
Thomas C. M. Lee

tcmlee@ucdavis.edu

Department of Statistics, University of California at Davis







Images: An example of a very complex sunspot group with a Bèta-Gamma-Delta magnetic classification as seen by NASA SDO's HMI instrument. This sunspot region was the source of a major X2.3 solar flare. The top image shows us this sunspot region in visible light. The bottom image is a so called ''magnetogram'' and shows the magnetic layout of a sunspot region. The red colour indicates sunspots or areas with a negative polarity and the blue colour indicates areas with positive polarity sunspots.

http://www.spaceweatherlive.com/en/help/the-magnetic-classification-of-sunspots

1968

MAGNETIC CLASSIFICATION OF ACTIVE REGIONS*

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and

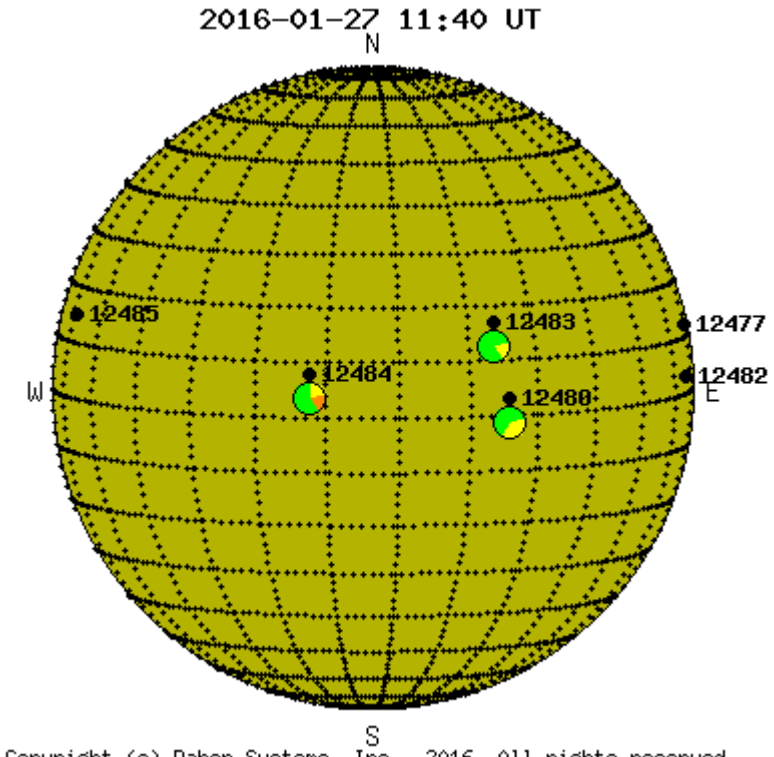
ROBERT HOWARD
(Mount Wilson and Palomar Observatories; California Institute of Technology, Pasadena, Calif., U.S.A.)

Table 1

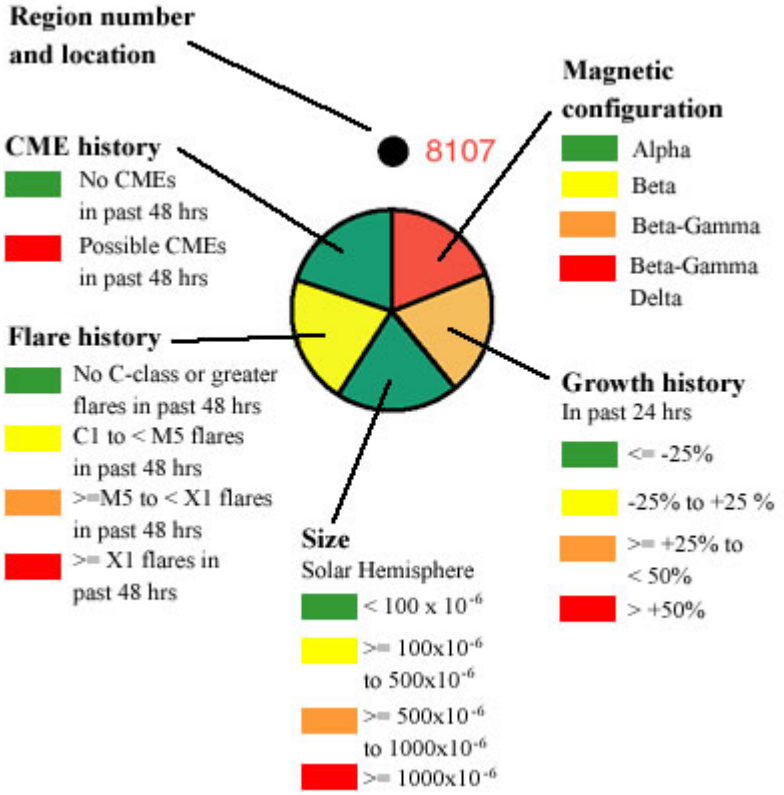
Magnetic Region Classifications

Designation	Definition
B	Simple bipolar region
BC	Simple bipolar region with one polarity partially encircling the opposite polarity
BS	A simple bipolar region with an area of opposite polarity embedded in one or both of the main bipolar components of the region
BY	Bipolar region with a peninsula of one polarity extending into the opposite polarity
BCS	Bipolar region with the characteristics of both a BC and a BS region.
BYS	Bipolar region with the characteristics of both a BY and a BS region.
BB	Two adjacent simple bipolar regions *not* clearly distinguishable as separate plages
BBC	A BB region with any of the C, Y or S characteristics
B–B	Two adjacent simple bipolar regions distinguished as separate plages
BCB	Two adjacent bipolar regions which were distinguished as separate plages but including any of the C, Y, or S characteristics
BBB	Three closely spaced B regions of any complexity
X	No classification given – poor data

https://www.raben.com/maps



The solar map shows the current active region numbers and locations assigned by the National Oceanic and Atmospheric Administration Space Weather Prediction Center. The colored circle below the active region indicates the activity level and hazard potential of an active region.



The key code was designed by the NASA Space Radiation Analysis Group to quickly identify hazardous active regions

К ответу на вопрос о поисковых системах:

На нашем сайте СПб ф САО Сусанна Тохчукова сделала базу данных с возможностями поиска по фильтрам. Адрес: http://www.spbf.sao.ru/prognoz/tables.html

Пример: в окошке table выбрано noaa, в окошке date выбран год (2016), месяц (01), дни (all) - все дни января 2016. Нажмите select. Появится таблица, в колонках z (McIntosh) и mag_type (Mt Wilson) указаны значения по соответствующим классификациям:

Search in Database tables

Table NOAA rownum 10 top top unsorted

Search by date: 2016 01 All Restrict by: where fieldname like select

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to TOP

select * from noaa where to_char(dateobs,'YYMMDD') like '1601__%' order by dateobs desc

NOAA	LOCATION	DATEOBS	LO	AREA	Z	LL	NN	MAG_TYPE	TIME_ISSUE	SRS_NUMBER	ORIG_URL	PATH	TYP
2490	S18E29	29.01.16	237	0020	Cro	08	04	Beta	29.01.16 16:30:03,000000	29	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160129SRS.txt	/data/a/misc/2016/01/29/20160129SRS.txt	1
2489	N09E14	29.01.16	252	0300	Dko	10	15	Beta	29.01.16 16:30:03,000000	29	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160129SRS.txt	/data/a/misc/2016/01/29/20160129SRS.txt	1
2488	N04W55	29.01.16	321	0220	Dao	08	15	Beta-Gamma	29.01.16 16:30:03,000000	29	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160129SRS.txt	/data/a/misc/2016/01/29/20160129SRS.txt	1
2487	S12W77	29.01.16	343						29.01.16 16:30:03,000000	29	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160129SRS.txt	/data/a/misc/2016/01/29/20160129SRS.txt	0
2486	S19W79	29.01.16	345						29.01.16 16:30:03,000000	29	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160129SRS.txt	/data/a/misc/2016/01/29/20160129SRS.txt	0
2483	N17	29.01.16	145						29.01.16 16:30:03,000000	29	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160129SRS.txt	/data/a/misc/2016/01/29/20160129SRS.txt	2
2480	N03	29.01.16	149						29.01.16 16:30:03,000000	29	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160129SRS.txt	/data/a/misc/2016/01/29/20160129SRS.txt	2
2490	S17E41	28.01.16	238	0020	Dro	10	04	Beta	29.01.16 16:30:03,000000	28	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160128SRS.txt	/data/a/misc/2016/01/28/20160128SRS.txt	1
2489	N10E27	28.01.16	252	0250	Dki	09	15	Beta	29.01.16 16:30:03,000000	28	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160128SRS.txt	/data/a/misc/2016/01/28/20160128SRS.txt	1
2488	N03W41	28.01.16	320	0220	Dao	08	14	Beta	29.01.16 16:30:03,000000	28	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160128SRS.txt	/data/a/misc/2016/01/28/20160128SRS.txt	1
2487	S12W63	28.01.16	342	0010	Axx	01	02	Alpha	29.01.16 16:30:03,000000	28	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160128SRS.txt	/data/a/misc/2016/01/28/20160128SRS.txt	1
2486	S19W65	28.01.16	344						29.01.16 16:30:03,000000	28	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160128SRS.txt	/data/a/misc/2016/01/28/20160128SRS.txt	0
2490	S18E57	27.01.16	235	0020	Cro	05	02	Beta	29.01.16 16:30:03,000000	27	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS/20160127SRS.txt	/data/a/misc/2016/01/27/20160127SRS.txt	1
2480	N10E29	27.01.16	253	0100	Dao	09	08	Beta	29.01.16	27	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS	/data/a/misc/2016/01/27	1

В начало |Обзор |Поиск в БД |Анализ |Архив 2 |Архив 1(внутр. доступ) |ДНА |EFRAT |К моделированию>> |Solarmonitor | Eng >>

Можно включить фильтры: в окошке *Restrict by: where fieldname*
вводите, например, z like Bxo% (не забудьте знак %), жмете *select:*

Search in Database tables

Table NOAA rownum 10 top top unsorted
Search by date: 2016 01 All Restrict by: where fieldname Z like Bxo% select
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and Z like 'Bxo%' **to TOP**
select * from noaa where to_char(dateobs,'YYMMDD') like '1601__%' and Z like 'Bxo%' order by dateobs desc

NOAA	LOCATION	DATEOBS	LO	AREA	Z	LL	NN	MAG_TYPE	TIME_ISSUE	SRS_NUMBER	ORIG_URL	PATH	TYP
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2485	N14E21	18.01.16	029	0010	Bxo	05	05	Beta	29.01.16 16:30:03,000000	18	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160118SRS.txt	/data/a/misc/2016/01/18 /20160118SRS.txt	1
2484	N05E48	11.01.16	094	0010	Bxo	02	03	Beta	29.01.16 16:30:02,000000	11	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160111SRS.txt	/data/a/misc/2016/01/11 /20160111SRS.txt	1
2482	N02W36	11.01.16	178	0010	Bxo	03	03	Beta	29.01.16 16:30:02,000000	11	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160111SRS.txt	/data/a/misc/2016/01/11 /20160111SRS.txt	1
2482	N02W23	10.01.16	179	0010	Bxo	03	04	Beta	29.01.16 16:30:02,000000	10	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160110SRS.txt	/data/a/misc/2016/01/10 /20160110SRS.txt	1
2478	N06W40	10.01.16	196	0010	Bxo	04	03	Beta	29.01.16 16:30:02,000000	10	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160110SRS.txt	/data/a/misc/2016/01/10 /20160110SRS.txt	1
2483	N16E44	09.01.16	125	0010	Bxo	03	03	Beta	29.01.16 16:30:02,000000	9	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160109SRS.txt	/data/a/misc/2016/01/09 /20160109SRS.txt	1
2482	N03W10	09.01.16	178	0010	Bxo	03	02	Beta	29.01.16 16:30:02,000000	9	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160109SRS.txt	/data/a/misc/2016/01/09 /20160109SRS.txt	1
2478	N07W28	09.01.16	197	0010	Bxo	02	03	Beta	29.01.16 16:30:02,000000	9	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160109SRS.txt	/data/a/misc/2016/01/09 /20160109SRS.txt	1
2476	S09W08	07.01.16	203	0010	Bxo	04	03	Beta	29.01.16 16:30:02,000000	7	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160107SRS.txt	/data/a/misc/2016/01/07 /20160107SRS.txt	1
2479	N11E05	05.01.16	217	0010	Bxo	03	04	Beta	29.01.16 16:30:02,000000	5	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160105SRS.txt	/data/a/misc/2016/01/05 /20160105SRS.txt	1
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2478	N07E53	03.01.16	195	0010	Bxo	02	02	Beta	29.01.16 16:30:02,000000	3	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160103SRS.txt	/data/a/misc/2016/01/03 /20160103SRS.txt	1

Number of rows found:13

Аналогично для магнитной классификации MAG_TYPE like Beta-Gamma% , *select:*

Search in Database tables

Table NOAA rownum 10 top top unsorted
Search by date: 2016 01 All Restrict by: where fieldname MAG_TYPE like Beta-Gamma% select
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and MAG_TYPE like 'Beta-Gamma%' **to TOP**
select * from noaa where to_char(dateobs,'YYMMDD') like '1601__%' and MAG_TYPE like 'Beta-Gamma%' order by dateobs desc

NOAA	LOCATION	DATEOBS	LO	AREA	Z	LL	NN	MAG_TYPE	TIME_ISSUE	SRS_NUMBER	ORIG_URL	PATH	TYP
2488	N04W55	29.01.16	321	0220	Dao	08	15	Beta-Gamma	29.01.16 16:30:03,000000	29	ftp://ftp.swpc.noaa.gov/pub/warehouse/2016/SRS /20160129SRS.txt	/data/a/misc/2016/01/29 /20160129SRS.txt	1

Number of rows found:1